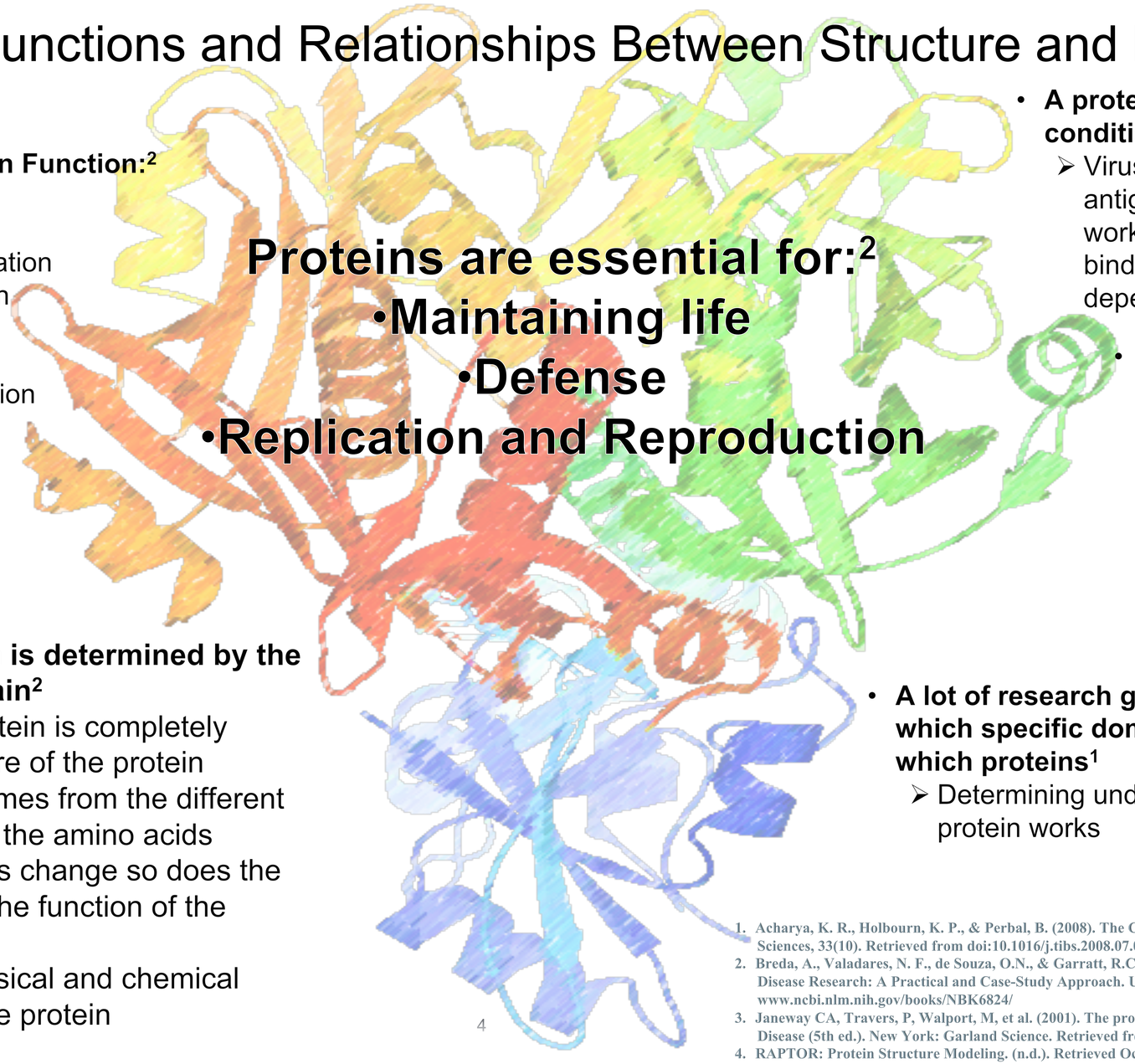
Mara Cardona and Max Shramuk

Protein Functions and Relationships Between Structure and Function

12 Subcategories for Protein Function:[2]

1. Cellular Process
2. Metabolism
3. DNA replication/modification
4. Transcription/Translation
5. Intracellular signaling
6. Cell-cell communication
7. Protein folding/degradation
8. Transport
9. Multifunctional proteins
10. Cytoskeletal/structural
11. Defense and immunity
12. Miscellaneous functions



Proteins are essential for:[2]

•Maintaining life

•Defense

•Replication and Reproduction

- **A protein is used under certain conditions[3]**
  - Viruses and bacteria will change their antigens to prevent detection; this works because the cells will find and bind to the viruses or bacteria depending on their antigen.
- **If proteins work under any condition, it makes it too easy for them to be activated and this would be bad for the cell and even worse for the human body[1]**
  - If proteins are activated easily, they can end up attacking healthy cells
  - If proteins don't get activated, the body could lose essential proteins that need to be produced

- **The function of a protein is determined by the biochemistry of its domain[2]**
  - The function of a protein is completely reliant on the structure of the protein
    - The structure comes from the different arrangements of the amino acids
    - If the amino acids change so does the shape effecting the function of the protein
    - Depends on physical and chemical parameters of the protein

- **A lot of research goes into determining which specific domains will bind to which proteins[1]**
  - Determining under what conditions a protein works

Bibliography:

1. Acharya, K. R., Holbourn, K. P., & Perbal, B. (2008). The CNN family of proteins: structure-function relationships. Trends in Biochemical Sciences, 33(10). Retrieved from doi:10.1016/j.tibs.2008.07.006.
2. Breda, A., Valadares, N. F., de Souza, O.N., & Garratt, R.C. (2008). Protein Structure, Modelling, and Applications. Bioinformatics in Tropical Disease Research: A Practical and Case-Study Approach. US: National Center for Biotechnology Information. Retrieved from http://www.ncbi.nlm.nih.gov/books/NBK6824/
3. Janeway CA, Travers, P, Walport, M, et al. (2001). The production of armed effector T cells. Immunobiology: The Immune System in Health and Disease (5th ed.). New York: Garland Science. Retrieved from http://www.ncbi.nlm.nih.gov/books/NBK27118/
4. RAPTOR: Protein Structure Modeling. (n.d.). Retrieved October 29, 2015.